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ABSTRACT

Because there is little research evidence about the listening performance of blind children, a study was designed (in Australia) to provide information on their listening habits as compared with those of sighted children. Forty-four students (22 of them blind) listened in a classroom to tape-recorded material from two tests, Forms X and Y of the Australian Council for Educational Research Listening Test L, designed to distinguish between items requiring receptive and reflective listening skills. Results showed that: (1) for total listening performance blind children were significantly superior; (2) for receptive or reflective listening there was no significant difference between sighted and blind children; (3) on receptive listening tasks both groups showed significant improvement on a second testing; (4) on reflective listening tasks both groups showed deterioration after a period of time; and (5) for receptive listening there was a significant distinction between sightedness and test-time, as well as sightedness, test-time and position in the classroom. (RN)

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A COMPARATIVE STUDY OF THE LISTENING PERFORMANCE OF BLIND AND SIGHTED STUDENTS AND OF THE EFFECTS OF THREE VARIABLES UPON LISTENING PERFORMANCE.

A paper presented to the Annual Conference of the International Communication Association, Montreal, Canada, April 27, 1973.

Despite the fact that a large body of research has suggested that listening skills are a central part of the teacher-pupil communication process, and of communication in general, there is little evidence about the listening of Australian children. There is even less evidence about the listening performance of blind children for whom this is a vital sensory modality both for the acquisition of knowledge and development of language, and also for basic day-to-day concerns such as mobility and independent living.

This study was designed to provide classroom-based data on the listening performance of Australian elementary-school children, both blind and sighted. Four hypotheses were tested:

1 that the total listening performance of blind students will be superior to that of sighted students;
2 that the receptive and reflective listening performance of blind students will be superior to that of sighted students;
3 that there will be a significant deterioration in listening performance during a 150 minute test session; and
4 that students seated in the front half of the classroom will have superior listening performance to those seated in the back half.

Subjects:

Forty-four students were involved. Twenty-two were legally-blind students from the Royal Victorian School for the Blind, Burwood, and from St Paul's School for the Blind, Kew; the other 22 were sighted students from the Bennetswood Elementary School. All subjects met the criteria of (i) having a chronological age of nine years or higher, (ii) being at the Grade 4 or 5 school-level, and (iii) having hearing acuity classed as 'being within normal limits'. Additionally, all blind students were required to have been classified as legally-blind. In Australia a person is considered to be legally-blind if his central visual acuity does not exceed 6/60 in the better eye with correcting glasses.

Other measures used to ascribe comparability to the two groups were those of family-size, socio-economic status (SES), and intelligence (IQ). SES was measured using the Slosson Intelligence Test (SIT), 1963.

Description of tests:

To test the listening performance of the blind and sighted students the Australian Council for Educational Research (ACER) Listening Test L (Forms X and Y) was used. Following a pattern set by the Brown-Carlsen Listening Comprehension Test (1953), the ACER Test L made the distinction between items requiring receptive and reflective listening

skills - approximately half of the 53 items used for this grade level were coded in each category. Material from the New Zealand Council for Educational Research (NZCER) Progressive Achievement Test: Listening Comprehension, was used as the intermediate listening experience given between the two testings with the ACER listening tests. This material was chosen because of its close similarity in form, content and interest level to the ACER tests.

The presence of blind students in this study necessitated a change from the usual method of answering listening test (viz. reading an answer booklet and checking alternative items on an answer sheet). The likely contamination of test results if the blind and sighted students were to use different answering materials created the need for an answering instrument which could be used by all students. After experimentation, the design chosen consisted of several sheets of white paper inserted between two pieces of 1/5" thick cardboard. The top piece had 55, 1/2" diameter holes punched in it. Students were required to write the letter corresponding to the appropriate answer in each hole. Blind students used strokes I, II, III and IIII to correspond to the letters A, B, C and D.

Another possible source of test-bias in using material such as the ACER tests to compare listening performance of blind and sighted students - content which concerned experiences and situations more likely to have been encountered by the sighted group - was anticipated but was found to be an unimportant factor in these tests.

All subjects were pre-tested audiometrically with a standard bell-tone, pure-tone audiometer, and by use of a Sentence-Repetitions Test which required students to repeat sentences played to them at four different levels of sound-pressure.

Experimental procedure:

During the three weeks prior to the major listening test session, individual IQ testing and an introductory session was conducted at the schools of the individual pupils. This session served (i) to enable the tester to meet and talk to Ss on an individual basis, (ii) to provide an opportunity to check, incidentally, previously-obtained data concerning family-size and parental occupations, (iii) to permit the administration of individual IQ tests, (iv) to enable a check to be made of pupils' hearing acuity, and (v) to give all pupils a chance to handle and practise using the listening test answer-pad. Meeting students individually was considered to be especially important in the case of the blind students in this study (Lowenfeld, 1963). Considerable care was taken to minimize the differences between the testing situations, and to control the possibly-differential effects of time on the two groups (Fitzgerald, 1972, 96-8).

The major listening testing for all students took place in the same classroom at the same time. The classroom was a 24' square classroom, typical of those found in more than 60% of all elementary schools in the state of Victoria. Desks were arranged to form 'front' and 'back' groups - a clear space of six feet was left between the two areas. With the exception of this apace; the physical arrangement of the desks in rows resembled that commonly-found in many classroom situations. Blind and sighted pupils were randomly distributed within groups.

The tape-recorder used for the listening testing was placed at the front-center of the classroom at a height of five feet from the floor - a level which corresponded to the level of a teacher's mouth when she is talking at the front of the classroom All the listening material was taped and the recorder's volume setting was adjusted so that the sound-pressure level (measured with an octave-filter sound-pressure level meter) averaged 78 decibels (db) at a distance of six feet directly in front of the speaker. This level was selected after sound-pressure level measurement of the tester's voice in an actual classroom situation.

The testing program consisted of an initial listening test, (ACER Test L, Form X), an intermediate listening experience using extracts from the PAT Listening Comprehension Test, and a second listening Test (ACER Test L,Form Y). Each of the two tests took about 45 minutes and the intermediate activity was of 50 minutes length. During this intermediate segment (which was also taped and replayed at identical average sound-pressure levels to those of the ACER Tests, readings were taken of the sound-pressure levels at nine points in the classroom. These are shown in Figure 1.

70	70	70
74	76	74
75	81	77

Sound

Fig.1. Average sound-pressure levels (db) in the test classroom

Results

The analysis of covariance of the test data for the three factors considered by this study - sight, position and time - is presented in Tables 1, 2 and 3.

The first hypothesis, that the total listening performance of blind

students would be superior to that of sighted students, was supported at the .025 level of confidence.

Table 1
Analysis of Covariance for Total Listening Scores on three factors (Sight, Time, Position)

Source	ms	df	F	p
Between				
A (Sight)	322.87	1	5.41	.025
B (position)	157.96	1	2.64	
A x B	.99	1	0.02	
subj. w.groups error between	59.78	40		
Within				
C (time)	6.01	1	0.40	
A x C	27.28	1	1.82	
B x C	4.01	1	0.27	
A x B x C	23.01	1	1.53	
C x subj.w. groups error within	15.03	39		

For the receptive and reflective sub-tests, while the results were in the predicted direction of blind pupil superiority, the obtained F values (3.58 and 2.77) were not statistically significant at the .05 level.

Table 2
Analysis of Covariance for Receptive Listening scores on Three Factors (Sight, Time, Position)

Source	ms	df	F	p
Between				
A (Sight)	122.75	1	3.58	
B (position)	58.59	1	1.71	
A x B	.14	1	.00	
Subj. w. gps error between	34.31	40		
Within				
C (time)	45.10	1	20.97	.001
A x C	27.28	1	12.69	.001
B x C	.56	1	0.26	
A x B x C	10.92	1	5.08	.025
C x subj.w. gps error (within)	2.15	39		

Table 3
Analysis of Covariance for Reflective Listening Scores on three factors (Sight, Time, Position)

Source	ms	df	F	p
Between				
A (sight)	53.42	1	2.77	
B (position)	30.54	1	1.58	
A x B	6.69	1	0.35	
Subj. w.gps error between	19.29	40		
Within				
C (time)	84.04	1	37.29	.001
A x C	0	1	0	
B x C	1.64	1	0.73	
A x B x C	2.23	1	0.99	
C x subj. w.gps error (within)	2.25	39		

However, the time factor had an important influence. For receptive listening, contrary to the hypothesis that there would be a performance decrement on a second testing, both blind and sighted students showed a significant improvement ($p < .001$). On the contrary, results of the reflective sub-test showed that time had affected the listening performance in the opposite direction; as hypothesised, there was a highly significant deterioration during the course of the listening test session ($p < .001$).

While there was no interaction evident between the factors on the reflective test, significant interactions between the three variables were found when receptive listening was demanded. Figure 2 shows this interaction.

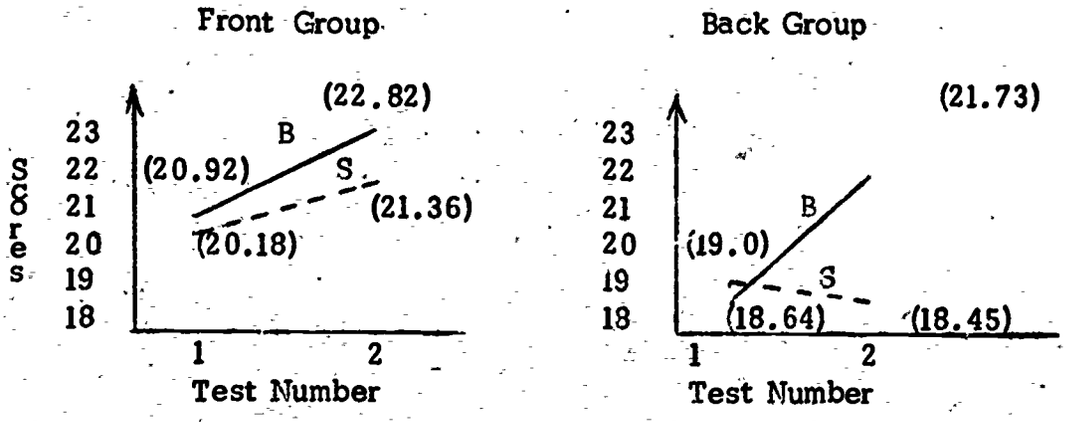

Fig.2 Profile of the A x B x C interaction

Additonally, in line with most of the reported studies, high positive correlations were found between intelligence and scores on the various parts of the listening tests. These ranged from .47 through .66.

Although some evidence existed which pointed to the relationship between listening scores and socioeconomic (SES) background for sighted pupils, (Deutsch, 1965,1966; Kirk & McCarthy, 1963 etc.,), there was little comparable evidence available for blind children. The rank-order correlation analysis for listening - SES for blind and sighted students is shown in Table 4. There was marked contrast between the two groups on this measure.

Table 4

Rank-order Correlations of SES (Congalton Status-ranking Scale) with Listening Comprehension Scores (ACER Test L)

Group	n	Listening test	r
Blind	22	Total	.04
Sighted	22	Total	.57
Blind	22	Receptive	.10
Sighted	22	Receptive	.60
Blind	22	Reflective	-.05
Sighted	22	Reflective	.35

In summary form, then, the results of the study showed

1 that for total listening performance blind students were significantly superior to their sighted counterparts;
2 that for receptive listening there was no significant difference between the two groups;
3 that for reflective listening there was no significant difference between the two groups;
4 that on receptive listening tasks both blind and sighted students showed significant improvement on a second testing;
5 that on reflective listening tasks both groups showed a performance deterioration after an extended period of time; and
6 that for receptive listening there was a significant interaction between sightedness and test-time, and also between sightedness, test-time and position within the classroom.

Discussion questions:

The results of this study raise several questions of importance to educators of blind and sighted elementary-school children. These include

1 What are the implications for language teaching and language development of the family-background -- listening performance correlations ?

2 What are the educational implications of the finding that, over an extended period of time, students showed a significant improvement in listening performance on one type of verbal listening task, and a significant deterioration over time when different verbal material is presented ?

3 What implications are there for classroom teaching in the found significant interaction between sightedness, position in the room and time ?

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